

Production Test

Main Chassis Alignment

Equipment Required:

1. Signal Generator with at least 3.3 to 30.5 MCS range.
2. Hewlett Packard model 410B VTVM.
3. Pretested "Exciter" Chassis.
4. Dummy load, 50 ohms, 100 watts.
5. Heterodyne detector for 9.55, 13.05, 20.05, 27.05, 34.05, 34.55, 35.05 and 35.55 MCS and 5.775 and 5.8 MCS generator.

Connect "Exciter" chassis to "Main" chassis to be aligned, by means of an extended cable between J2 and P2. Connect 50 ohm dummy load to J10.

Always start slug adjustments from bottom of can for bottom coils and single coils, and top of can for top coils. If in doubt about position of slug, run slug to bottom of can or top of can whichever is appropriate, then run slug into coil until maximum position is indicated.

Alignment Procedure:

1. Connect signal generator to pin #2 of V14. Set "Function" switch to LSB and "Operations" switch to MOX. Set "Meter" sensitivity to maximum CW position. Set "Band Selector" to 10M (28.0 - 28.5 MCS). With "Driver Tune" and "Final Tune" set for maximum capacity feed a 2V. 27.5 MCS signal into "pin #2" of V14 and adjust generator level so that "Level Indicator" M1 reads about -20db. Peak bottom slug of L26 for maximum on M1. Set generator to 30.5 MCS. Rotate "Driver Tune" and "Final Tune" to minimum capacity. Adjust C143 for maximum output.

NOTE: If oscillation occurs when adjustments are made check to see if C149 (neutralizing capacitor) is set about one half capacity (90 degree rotation from maximum capacity) then repeat Step 1.

2. Remove V18 and V19 from sockets. Disconnect the +215V. lead from the junction of R137 and R138. Feed a 29 MCS signal of 2 volts to Pin #2 of V14. Connect a Hewlett Packard 410B VTVM probe to the junction of C148 and L30. Rotate "Driver Tune" and "Final Tune" until HP 410B reads maximum. Adjust C149 for minimum reading on HP 410B. Return "Final Tune" for maximum output on HP 410B. Readjust C149 for minimum on HP 410B. Repeat above until reading on HP 410B is less than .2 volts.
3. Replace V18 and V19 and reconnect +215V. lead to junction of R137 and R138. Remove V13 from its socket.
4. Connect the signal generator to Pin #1 of V12. Rotate "Driver Tune" to maximum capacity. With a 27.5 MCS signal into Pin #1 of V12 rotate "Final Tune" for maximum indication on M1. Adjust signal generator output to keep indication on M1 below -10 db. Peak bottom slugs of L26 and T15 for maximum output on M1, readjusting signal generator level to keep reading below -10 db.
5. Set signal generator to 30.5 MCS. Rotate "Driver Tune" to minimum capacity and "Final Tune" for maximum on M1. Peak C143 and C132 for maximum on M1 keeping reading below -10 db by means of signal input level.
6. Set signal generator to 29 MCS. Peak "Driver Tune" and "Final Tune" for maximum on M1 (below -10 db). Adjust top slug of T15 for maximum on M1.
7. Repeat steps 4, 5, and 6, then with HP 410B probe connected to J10, increase signal generator output until HP 410B reads at least 70V.

8. Rotate "Band Selector" to 15M, and set signal generator to 20 MCS. Rotate "Driver Tune" to maximum capacity and "Final Tune" for maximum on M1 (below -10 db.). Adjust top slug of L25 and bottom slug of T-14 for maximum on M1 (below -10 db).
9. Rotate "Band Selector" to 20M and set signal generator to 14.6 MCS. Set "Driver Tune" to minimum capacity and "Final Tune" for maximum indication on M1 (below -10 db). Adjust C142 and C131 for maximum on M1 keeping level below -10 db.
10. Rotate "Band Selector" to 15M. Set signal generator to 21.25 MCS and adjust "Driver Tune" and "Final Tune" for maximum on M1 (below -10 db). Peak top slug of T14 for maximum on M1 keeping level below -10 db.
11. Repeat Steps 8, 9, and 10, then with HP 410B probe connected to J10, increase signal generator output until HP 410B reads at least 70V.
12. Rotate "Band Selector" to 40M and set signal generator to 6.95 MCS. Rotate "Driver Tune" to maximum capacity and "Final Tune" for maximum on M1 keeping reading below -10 db. Adjust bottom slugs of L24 and T13 for maximum on M1 below -10 db.
13. Set signal generator to 7.5 MCS. Rotate "Driver Tune" to minimum capacity and "Final Tune" for maximum indication on M1 below -10 db. Adjust C140 and C129 for maximum on M1 below -10 db.
14. Set signal generator to 7.15 MCS. Peak "Driver Tune" and "Final Tune" for maximum indication on M1 below -10 db. Adjust top slug of T13 for maximum on M1 below -10 db.
15. Repeat Steps 12, 13, and 14, then with HP 410B probe connected to J10, increase signal generator output until HP 410B reads at least 70V.

16. Rotate "Band Selector" to 80M and set signal generator to 3.3 MCS. Rotate "Driver Tune" to maximum capacity and "Final Tune" for maximum on M1 below -10 db. Adjust top slug of L23 and bottom slug of T12 for maximum on M1 below -10 db.
17. Set signal generator to 4.15 MCS. Rotate "Driver Tune" to minimum capacity and "Final Tune" for maximum indication on M1 below -10 db. Adjust C139 and C128 for maximum on M1 below -10 db.
18. Set signal generator to 3.75 MCS. Peak "Driver Tune" and "Final Tune" for maximum on M1 below -10 db. Adjust top slug of T12 for maximum indication on M1 below -10 db.
19. Repeat Steps 16, 17, and 18, then with HP 410B probe connected to J10, increase signal generator output until HP 410B reads at least 70V.
20. Plug V13 into socket X13. Connect heterodyne detector to Pin #1 of V12. Set "Band Selector" to 80M and adjust C113 for zero beat with heterodyne detector set for 9.55 MCS. Set "Band Selector" to 40M and heterodyne detector to 13.05 MCS. Adjust C114 for zero beat. Set "Band Selector" to 20M and heterodyne detector to 20.05 MCS. Adjust C115 for zero beat. Repeat above procedure for 15M, 10M, 10M, 10M, and 10M bands setting heterodyne detector to 27.05, 34.05, 34.55, 35.05, and 35.55 MCS and adjusting C116, C117, C118, C119 and C120 for zero beat.
21. Remove heterodyne detector and connect the HP 410B probe to Pin #1 of V12. Switch through all bands with the "Band Selector" and note the voltage reading on the HP 410B. Readings should be not less than .6V nor more than 3V.
22. Connect 5.775 and 5.8 MCS generator to J9. With generator set for 5.775 MCS increase output of generator so it is possible to tune

up transmitter in the 80M band at about 3.8 MCS. Do not let output meter read above -10 db. Place a 1000 ohm resistor across the primary of T9 and adjust top slug for maximum on M1 below -10 db. Increase generator output if necessary. Remove 1000 ohm resistor from primary of T9 and place across secondary of T9. Adjust bottom slug for maximum on M1 below -10 db. Remove 1000 ohm resistor. Set generator to 5.8 MCS. Place 1000 ohm resistor across primary of T10 and adjust top slug of T10 for maximum on M1 making sure to keep output reading below -10 db by reducing generator output as required. Remove 1000 ohm resistor from primary of T10 and place it across the secondary. Adjust bottom slug of T10 for maximum on M1. Remove 1000 ohm resistor from secondary of T10 and place it across the primary of T11. Follow same procedure as used for T10, then remove the 1000 ohm resistor.

23. Connect an aligned and tested "VFO" chassis to the "Main" chassis by means of extended cable from J8 to P8. Use a standard length HX-500 cable from J7 to J9. Remove V13 and connect the HP 410B probe to Pin #1 of V12. Set HP 410B to 1V. A.C. scale. Connect the signal generator to Pin #2 of V9A with output set for about .05 volts (50,000 u.v.). Set signal generator to 5.8 MCS and adjust "R.F. Level" (on "Exciter" Chassis) so that HP 410B reads about .5V. Scan the range of 5.55 - 6.05 MCS with the signal generator, noting the frequency of maximum response on the HP 410B. Set signal generator to the frequency of maximum response and adjust "R.F. Level" so that HP 410B reads 1 volt (full scale). Rotate the signal generator dial slowly to cover approximately 5.5 to 6.15 MCS. At 5.5 MCS the HP 410B should read less than .1 volts. As the signal generator is rotated slowly toward 6.15 MCS the .5 volt indication on the HP 410B should occur below 5.55 MCS (between 5.5 and 5.55 MCS). From 5.55 to 6.05 MCS the HP 410B should not read lower than .5 volts. The HP 410B should read less than .1 volts at 6.15 MCS.